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Japanese Monetary Policy and Household Saving

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Mots-clés : Japon, taux d'intérêt, politique monétaire, épargne des ménages, inégalité.
Keywords: Japan, interest rate, monetary policy, household saving, inequality.

Résumé : Cet article analyse l'impact de la politique monétaire sur l'épargne des ménages au Japon entre 1993 et 2017. En utilisant les données annuelles du Japan Panel Survey of Consumers, il est démontré que l'expansion monétaire a contribué à un élargissement de l'écart de l'épargne nette des ménages par un effet négatif sur le volume de l'épargne des ménages ayant un faible niveau d'éducation. En revanche, les ménages comptant au moins un universitaire ont tendance à être en mesure de compenser ces effets négatifs de l'expansion monétaire, voire à en bénéficier. L'article montre comment l'inégalité en termes de capacité à se constituer un patrimoine a augmenté au Japon au cours des dernières décennies. L'analyse statistique tient compte de la taille des ménages ainsi que des effets spatiaux potentiels dans le mécanisme de transmission de la politique monétaire sur l'épargne des ménages.

Abstract: This paper analyzes the impact of monetary policy on household saving in Japan between 1993 and 2017. Using annual data from the Japan Panel Survey of Consumers it is shown that monetary expansion has contributed to a widening gap in households' net saving through an adverse effect on the volume of saving of non-academic households. In contrast, households with at least one academic tend to be able to compensate these adverse effects of monetary expansion or can even benefit from it. The paper documents how inequality in terms of the ability to build up wealth has increased in Japan over the past decades. The statistical analysis controls for household size as well as potential spatial effects in the transmission mechanism of monetary policy on household saving.

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Abstract

This paper analyzes the impact of monetary policy on household saving in Japan between 1993 and 2017. Using annual data from the Japan Panel Survey of Consumers it is shown that monetary expansion has contributed to a widening gap in households' net saving through an adverse effect on the volume of saving of non-academic households. In contrast, households with at least one academic tend to be able to compensate these adverse effects of monetary expansion or can even benefit from it. The paper documents how inequality in terms of the ability to build up wealth has increased in Japan over the past decades. The statistical analysis controls for household size as well as potential spatial effects in the transmission mechanism of monetary policy on household saving.

Keywords: Japan; interest rate; monetary policy; household saving; inequality
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1 Introduction

The impact of monetary policy on income and wealth inequality has become a rich and growing field of research in recent years (Coibion et al., 2017; Furceri et al., 2018; Auclert, 2019; Colciago et al., 2019; Herradi & Leroy, 2020). Wealth inequality, in particular, has been shown to increase because of disproportionately high asset price inflation in developed economies (Domanski et al., 2016), which in turn is driven by monetary easing (Bordo & Landon-Lane, 2013; Hülsmann, 2014; Israel, 2017; Duarte & Schnabl, 2019). Adam & Tzamourani (2016) show that increasing equity prices primarily benefit the top of the wealth and income distribution in the Euro Area. Taylor (2020) provides similar and even stronger evidence for the US.

Japan is a special case among developed countries in that it had long been regarded as comparatively even in terms of its income and wealth distributions (Moriguchi & Saez, 2008). This has changed in recent decades. Lise et al. (2014) have shown that inequality between Japanese households has increased at a relatively fast rate since the mid 1990s. At the same time the country has the longest track record of monetary easing and unconventional monetary policy measures (Ueda, 2012; Dell'Ariccia et al., 2018). This makes Japan a particularly interesting target for studying the relationship between monetary policy and inequality.

Saiki & Frost (2014) have explicitly analyzed the impact of Japanese monetary policy on income inequality between 2002 and 2013 and find that unconventional policy measures of the Bank of Japan have contributed to the rising gap between the top and bottom strata of the income distribution. They analyze quarterly household survey data made available by the Japanese Cabinet Office. Israel & Latsos (2020) find similar results covering the same time span using the annual Japan Household Panel Survey Data (JHPS) compiled by researchers at Keio University in Tokyo. They also show that Japanese monetary policy has contributed to

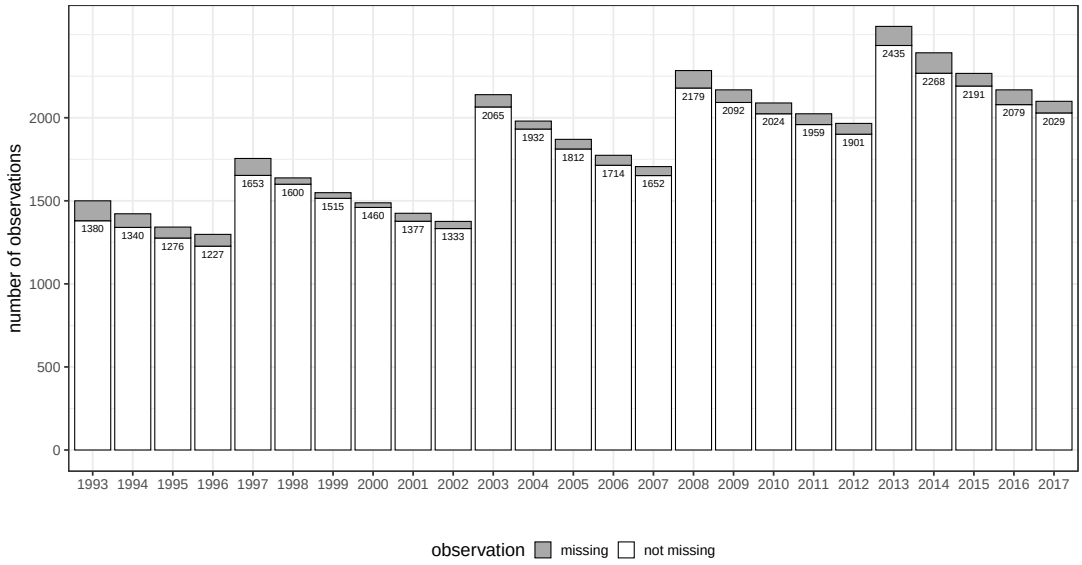
an increasing pay gap between employees with and without university degrees, which suggests that education is an important factor in explaining the heterogeneous effects of monetary policy on income. Taghizadeh-Hesary et al. (2020) also find strong empirical evidence that monetary policy has contributed to rising income inequality in Japan. In contrast, Inui et al. (2017) do not find a persistent impact of Japanese monetary policy on inequality between households in terms of income and expenditure, but their data series end in 2008.

With the economic policy program of Prime Minister Shinzo Abe launched in 2013 the Bank of Japan has doubled down on its policies and continued its aggressive monetary expansion. In this paper, the case of Japan is studied in more detail by using the most recent data of the Japanese Panel Survey of Consumers (JPSC) which is also provided by Keio University. The annual data cover the period from 1993 to 2017 allowing us to include the effects of monetary policy during the first years of *Abenomics*. The focus lies on the impact of monetary policy on Japanese household saving, and more specifically on inequality between academic and non-academic households in terms of their monthly volume of saving. The monthly flow of household saving is the basis for building wealth over time and it is therefore, alongside asset price inflation, another important element for understanding the dynamics of wealth inequality. The main contribution of the paper is to highlight this potential driver of inequality and its connection to monetary policy. Potentially heterogeneous effects of monetary policy on saving in different regions are also taken into account.

2 Data and Descriptive Statistics

In this study two sets of empirical data are used. Different indicators of the monetary policy stance of the Bank of Japan are compiled from their data base. They are matched with comprehensive annual panel survey data on various aspects of household finances. Both sets of variables are presented and discussed in the following sections.

Figure 1: Number of observations per year for net household saving per month in JPSC



Japan Household Survey Data

The main source of data on Japanese household finances is the annual Japanese Panel Survey of Consumers (JPSC). The JPSC was originally launched in 1993 by the Institute for Household Research and has since been conducted in October each year. Following the dissolution of the Institute for Household Research in December 2017, the panel data research center at Keio University has taken over responsibility for the implementation, management and provision of the survey data.

The most recent wave available for research purposes covers the year 2017. The JPSC includes five cohorts from 1993, 1997, 2003, 2008 and 2013. The highest number of people interviewed in one year is $n = 2550$ (in 2013). The lowest number of people interviewed in one year is $n = 1298$ (in 1996). The structure of the panel is shown in Figure 1.

The sample is selected using a two-stage stratified random sampling process with subjects being stratified into Japan's 47 prefectures. The respondents included in the survey are initially drawn from Japan's female population aged 24 to 34. As a result, in 2017, the highest observed

age of a respondent is 58 years. The JPSC focuses on women mainly because of two reasons. First, with a changing understanding of the role of women in households and society, the survey aims to provide insight into the working conditions and lifestyle choices of women. Second, there has been a long Japanese tradition that women control the household finances.[1] Thus, the JPSC is well suited for analyzing household finances and their evolution over two and a half decades.

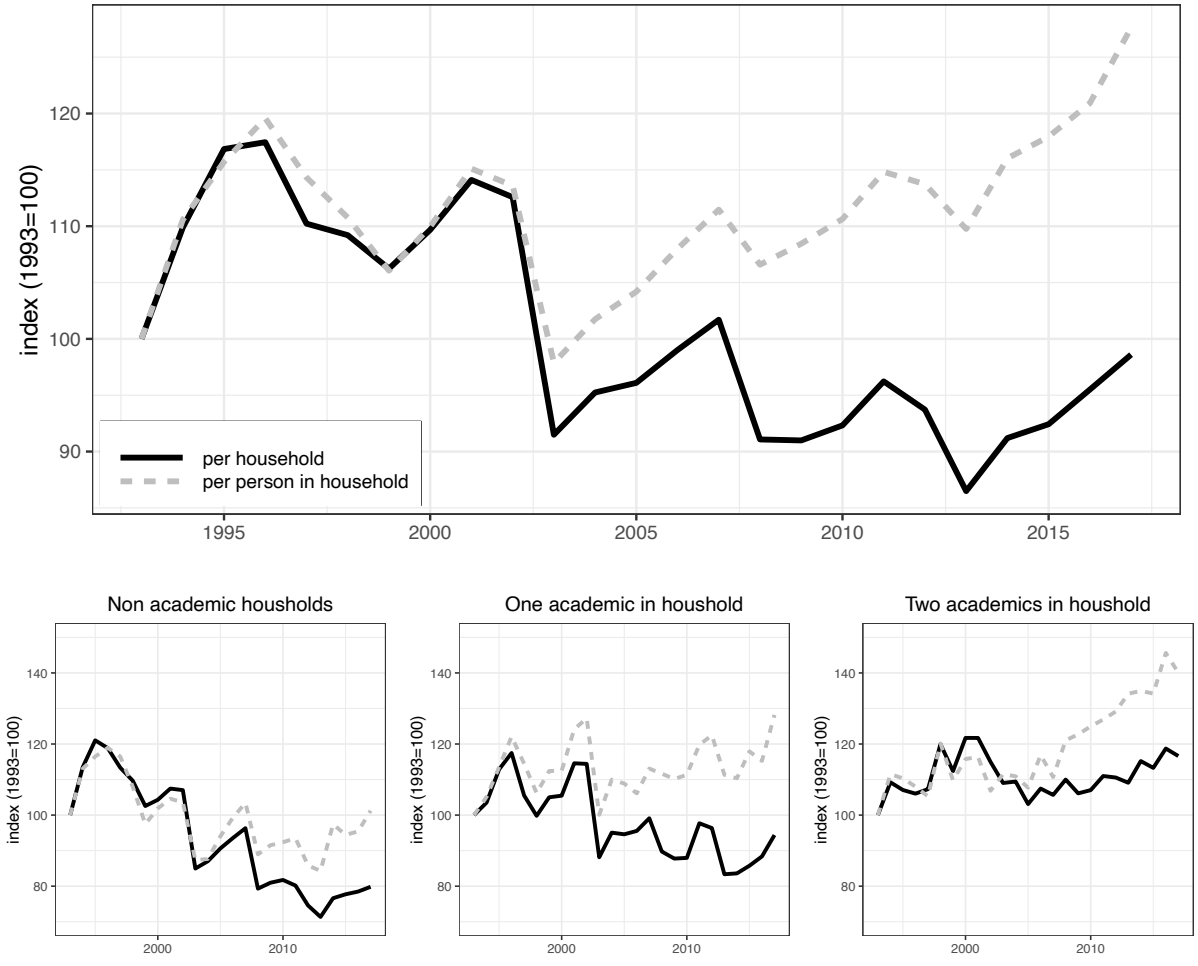
In this paper, we take a closer look at the heterogeneous development of household saving attributed to different levels of education of respondents and their spouses. Moreover, with respondents being attributable to their respective prefectures, we are able to control for potential spatial effects between the economic and financial center based in the region of Kanto, including Tokyo, and the country's periphery.

The target variable of the following analysis is net household saving per month. The corresponding question in the panel refers to the amount that the respondent's household saved during the last month, i.e. in September of the respective year. Respondents are classified as being either academics, having a university degree, or not. If the respondent is married,[2] the education level of the spouse is also taken into account. A three-level factor variable is created describing the education status of the household as either "non-academic" when both respondent and spouse have not obtained university degrees, as "one academic" if either the respondent or spouse have obtained a university degree, but not both, and lastly as "two academics" if both have. Over the entire panel this classification leads to a total number of observations for the saving variable of 22,612 for non-academic households which corresponds to 50.8% of all available observations. 14,490 (32.6%) observations come from households with one academic,

[1] Men are often given a monthly allowance termed "okozukai". According to a survey conducted by the Shinsei Bank, Limited, men received an average monthly allowance of JPY 39,836 in 2017 (Kudo, 2018), which corresponds to about USD 370.

[2] There are 14,000 (31.5%) observations of the saving variable for unmarried women and 30,493 (68.5%) for married women. In 1,312 instances the marital status of a respondent changed from unmarried to married from one year to the next. There are 742 instances in which the status changed from married to unmarried.

Figure 2: Mean household net saving per month



and 7,391 (16.6%) from households with two academics.

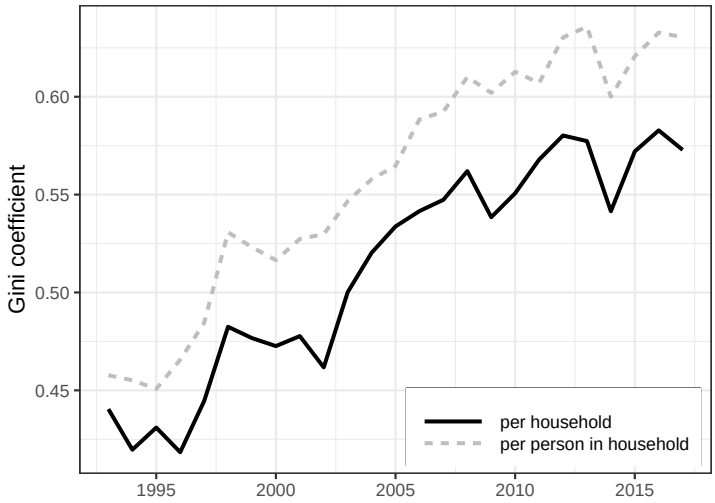
Average net saving increases with the level of education. Over the entire pooled sample, non-academic households save on average JPY 47,017 per month (median of JPY 33,000). This corresponds to an average of JPY 13,153 per household member (median of JPY 8,750). Households with one academic save JPY 57,982 on average (median of JPY 45,000), i.e. JPY 19,132 per household member (median of JPY 12,500). Households with two academics save almost twice as much as non-academic households, on average JPY 90,334 (median of JPY 67,000) per month, which corresponds to JPY 28,191 per household member (median of JPY 18,000).

Figure 2 contains plots of the annual means of the saving variable indexed to the base year 1993. The indices for the overall sample as well the three different education groups are shown. Inequality between the different groups has increased as there is a decreasing trend for non-academic households, while for households with two academics monthly net saving have increased. For households with one academic the trend is negative on the household level, but positive per household member. In all cases the index takes on a more favorable trend when corrected by the number of persons living in the household, indicating that average household size has diminished during the sample period. In fact, although instances of an increasing number of household members from one year to the next occur more often than instances of a decreasing number (4,850 times versus 4,405 times), the respondents added to the panel over time live on average in smaller households with every new cohort.[3]

The Gini coefficients for net saving per household and per household member are shown in Figure 3 for respondents aged 30 to 35 each year. Looking at the sub-sample for a fixed age group over time avoids a potential bias that can be expected because of the nature of the data. As the same statistical units are followed over time inequalities that emerge might not be

[3]With every new cohort (1993, 1997, 2003, 2008 and 2013) the average household size of the new respondents added decreases: 4.09, 3.53, 3.47, 3.31 and 3.26.

Figure 3: Gini coefficient of household net saving per month for respondents aged 30 to 35



representative of the population as a whole in any given year. It is to be expected that inequalities increase when the same group of people is observed from a relatively young age onward. This might exaggerate trends in inequality for society as a whole. Hence, we focus on the same age group that some individuals leave and others enter from year to year. The corresponding Gini coefficients for the entire sample can be found in Table 3 in the appendix.

Interestingly, the potential bias does not show up in the data. For households as a whole, the Gini coefficient has increased from 0.44 in 1993 to 0.57 in 2017, for both the sub-sample of respondents aged 30 to 35 and the entire sample. In fact, when we look at saving per household member, the Gini coefficient has even increased more within the sub-sample (from 0.46 to 0.63) than in the entire sample (from 0.48 to 0.62).

Other indicators of inequality reveal the same pattern. For example, the ratio of the 90th percentile of net household saving to its median has increased from 2.3 to 3.4 between 1993 and 2017. The interquartile range has grown from JPY 55,000 to JPY 65,000. The share of the top 10% of households has grown from 29.7% in 1993 to 39.0% in 2017, while the share of the

Figure 4: Mean monthly net saving per household in different regions

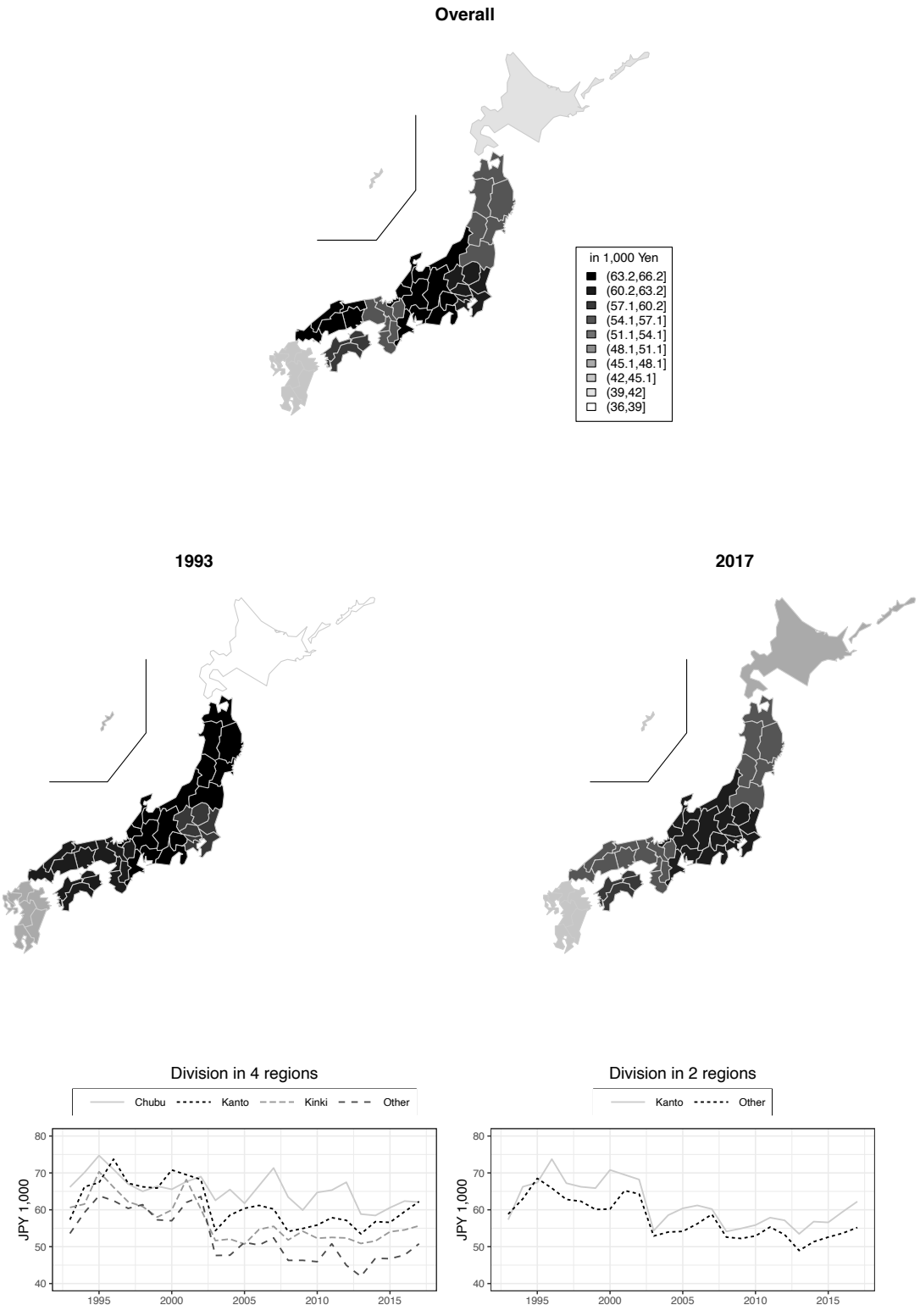
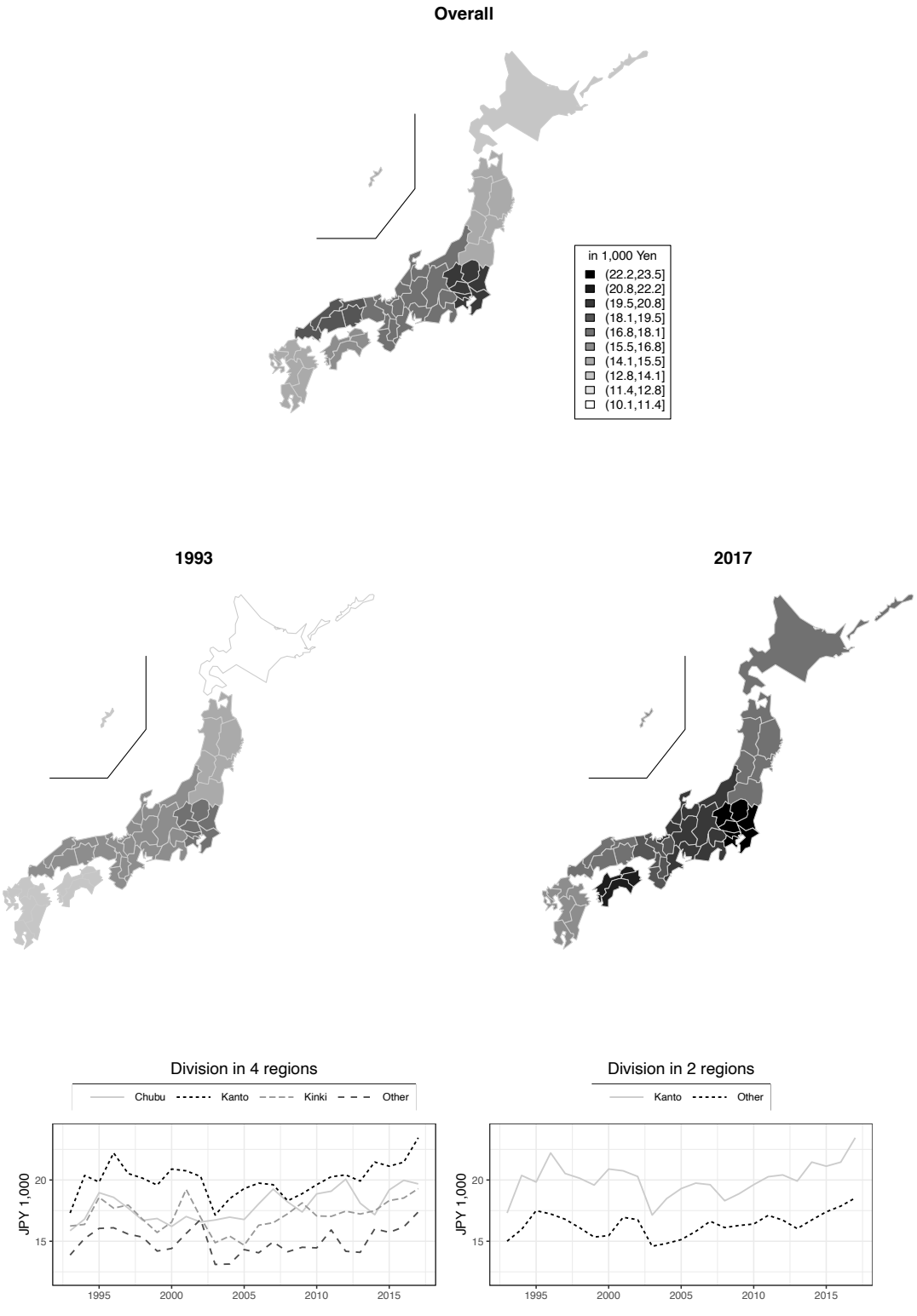


Figure 5: Mean monthly net saving per household member in different regions



bottom half of the distribution fell from 26.5% to 13.5%. [4]

Inequality between different regions in terms of average monthly saving reveals no clear trend. It has mildly decreased overall as illustrated in Figures 4 and 5. For these maps average monthly saving in 8 regions were calculated.[5] The economically strongest region of Japan is Kanto, which consists of the 7 prefectures of Ibaraki, Tochigi, Gunma, Saitama, Chiba, Kanagawa and the capital Tokyo. It is also the region where the average household in the sample saves most per household member. When taken as a whole households in the regions of Chubu and Chugoku save more than households in Kanto. For most regions, such as Chugoku there are, however, very few observations, often less than 100 per year as can be seen in Table 4 in the appendix. Therefore, larger aggregates are formed to reduce interference of random noise with estimation results. The bottom panels of Figures 4 and 5 show the evolution of average net saving for these broader regional subdivisions.

There is no indication that the trends in different regions deviate strongly from one another. When the sample is divided into the financial and economic center Kanto which accounts for 32.9% of all observations and the rest of the country, the two series evolve almost synchronously for both monthly saving per household and monthly saving per household member.

Japanese Monetary Policy

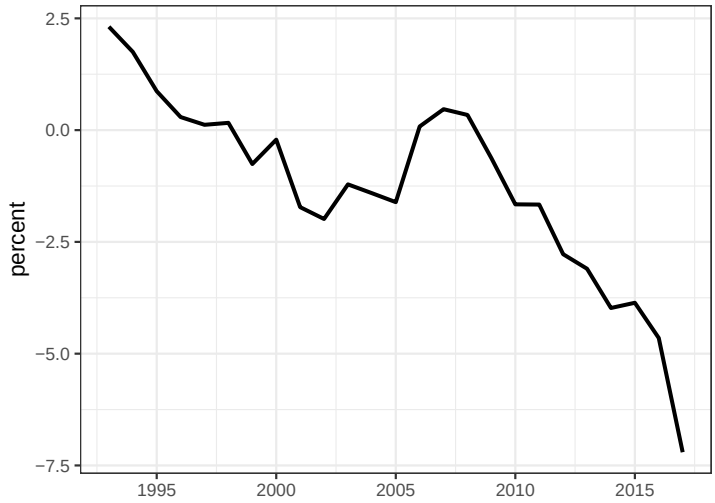
The expansionary monetary policy stance of the Bank of Japan has been discussed in different contexts (Ueda, 2012; Saiki & Frost, 2014; Dell'Ariccia et al., 2018; Israel & Latsos, 2020). Several indicators can be used for specification. The money stocks M0 and M1 as well as their annual growth rates are plotted in Figure 8 in the appendix.

The monetary base (M0) has grown from 42.9 trillion yen at the end of 1992 to 474.1 trillion

[4] See Figure 7 in the appendix.

[5] These regions are Hokkaido in the north, Tohoku, Kanto, Chubu, Kinki, Chugoku, Shikoku and Kyushu including the southernmost islands of Okinawa, which are shown in inset maps in Figures 4 and 5.

Figure 6: Krippner's shadow short-term rate of interest



yen in 2017. This corresponds to an 11-fold increase over the entire period or an average annual growth rate of 10.1%. The broader monetary aggregate M1 has increased from 152.0 to 711.9 trillion yen over the same period, which corresponds to much lower average annual growth rate of 4.7%. With the advent of unconventional purchasing programs, monetary policy measures are better reflected in the growth of the monetary base, which translates into sharp increases in the size of the balance sheet of the Bank of Japan. Since 2002, it has grown at an average annual rate of 9.2%, while the short-term interest rate set by the Bank of Japan has remained at or close to 0 the entire time. Since 2016, it is kept at -0.1%.

Our data cover episodes of conventional monetary expansion via interest-rate setting as well as unconventional asset purchase programs. A suitable summary statistic that incorporates both is the shadow short-term rate of interest as suggested by Krippner (2013). Figure 6 shows the annual averages of the shadow short rate (SSR), which reveal an increasingly expansionary monetary policy stance as the rate is pushed further into negative territory. In 2017, four years into *Abenomics*, the shadow short rate reached -7.2%.[6]

[6]Data on the SSR that we use can be downloaded here: https://www.ljkmfa.com/test-test/

3 Model, Estimation Results and Robustness Checks

In order to study the effect of monetary policy on monthly net household saving y_{it} per household member n_{it}, we estimate a two-way fixed effects model,[7] including household-level (γ_i) and time-level (δ_t) fixed effects:

$$\begin{aligned}\ln\left(\frac{y_{it}}{n_{it}}\right) = \alpha_1 \ln\left(\frac{m_{it}}{n_{it}}\right) + \alpha_2 Education_{it} + \alpha_3 Region_{it} + \alpha_4 SSR_t + \\ \alpha_5 Region_{it} * SSR_t + \alpha_6 Education_{it} * SSR_t + \beta' X_t + \gamma_i + \delta_t + \epsilon_{it},\end{aligned} \tag{1}$$

where m_{it} is net monthly income in September of year t of respondent i's household. Both the explained variable and net monthly income are transformed with the natural logarithm to reduce the skewness of their distributions. $Education_{it}$ is a dummy variable taking on the value 1 if household i in year t had at least one academic (i.e. either respondent or spouse holding a university degree, or both) and 0 otherwise. $Region_{it}$ takes on the value 1 if household i in year t was based outside of the economic center of the country, that is, outside of Kanto, and 0 otherwise. The variable SSR_t is the average shadow short rate for year t. The interaction terms of the SSR_t and the regional and educational dummy variables are included in the regression. The percentage change of the Nikkei index from year $t-1$ to t as well as the percentage change of nominal GDP from year $t-1$ to t are added as time-varying control variables in vector X_t.

The estimation results of the baseline model with robust standard errors are summarized in Table 1. The dummy variables for education and region are statistically significant, underlining again that saving per household member are on average higher for academic households and lower for households outside of Kanto. The net monthly income is positively associated with net saving.

international-ssrs/. The SSR is our preferred proxy for the monetary policy stance of the Bank of Japan. However, we will use alternative measures in our robustness checks as some caution is warranted (Krippner, 2020).

[7] The fixed effects model is preferred over a random effects model as the result of a Hausman test.

Explained variable	Baseline Model $\ln\left(\frac{y_{it}}{n_{it}}\right)$ ln of monthly saving per household member
ln(net monthly income per HH member)	0.34^{***}
	(0.01)
Education (1=at least one academic in HH)	0.84^{***}
	(0.09)
Region (1=not in Kanto)	-0.15^{*}
	(0.06)
Shadow Short Rate	0.02^{**}
	(0.01)
Region*Shadow Short Rate	-0.00
	(0.01)
Education*Shadow Short Rate	-0.03^{***}
	(0.01)
R^2	0.10
Household fixed effects	Yes
Time fixed effects	Yes
Controls	Yes
Num. obs.	42202

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$

Table 1: Estimation results for baseline model shown in equation 1

The shadow short rate as such has a statistically significant effect on household saving, in that higher interest rates are associated with a higher volume of saving. In other words, monetary expansion is associated with reduced saving. The model estimates that a reduction of the SSR_t by one percentage point, reduces monthly saving per household member by 2%. The interaction term of the SSR_t and the education variable is highly significant, too. The estimated coefficient is negative and its absolute value is higher than that of the SSR_t alone, indicating that a reduction in the SSR_t by one percentage point is on average associated with a 1% increase in saving per household member if at least one academic lives in the household.

This suggests that the adverse effects of expansionary monetary policy on saving are compensated in academic households. Expansionary monetary policy thus leads to a widening gap between non-academic and academic households. The model predicts that a reduction of the SSR_t by one percentage point is associated with an increase in the ratio of average saving between academic and non-academic households by about 3%.[8] The interaction term of the SSR_t with the regional dummy variable is not statistically significant, suggesting that spatial effects on this level of analysis are negligible.

The estimation results are robust to variations and transformations of the explained variable as shown in Table 2. Avoiding the log-transformations of the explained variable and the income variable (Model 1) leads to similar estimation results. A reduction in the SSR_t by one percentage point is estimated to lead to an average increase of the gap in monthly saving per household member between academic and non-academic households of more than 5%.[9] This model specification suggests again that academic households do not only compensate the ad-

[8]The average estimated gap between households with at least one academic and non-academic households is 84%. A reduction of the SSR_t by one percentage point is associated with a reduction in saving by 2% for non-academic households and an increase in saving by 1% for households with at least one academic. The ratio between average saving of these two types of households thus increases from 1.84 to $1.84 * 1.01/0.98 = 1.896$, that is by about 3.1%.

[9]This can be seen when the absolute values of the estimated coefficients for the SSR_t and its interaction term with education are put into relation with one another: $0.38/7.03 = 0.054 = 5.4\%$.

Explained variable	Model 1 $\frac{y_{it}}{n_{it}}$ saving per household member	Model 2 y_{it} saving of household	Model 3 $\ln(y_{it})$ ln of saving of household
Net income per HH member	0.16^{***}		
	(0.01)		
Net income of HH		0.11^{***}	
		(0.01)	
log(net income of HH)			0.31^{***}
			(0.01)
Education (1=at least one academic)	7.03^{***}	23.21^{***}	1.19^{***}
	(1.69)	(4.12)	(0.11)
Region (1=not in Kanto)	-0.30	-2.67	-0.13
	(1.33)	(3.22)	(0.08)
Shadow Short Rate	0.23	0.52	0.03^{***}
	(0.16)	(0.44)	(0.01)
Region*Shadow Short Rate	-0.04	0.02	-0.00
	(0.16)	(0.44)	(0.01)
Education*Shadow Short Rate	-0.38^{*}	-1.38^{**}	-0.05^{***}
	(0.16)	(0.42)	(0.01)
R^2	0.20	0.09	0.08
Household fixed effects	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes
Controls	Yes	Yes	Yes
Num. obs.	42202	42202	42202

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$

Table 2: Variations of the explained variable with and without log-transformation

verse effects, but on average benefit in terms of of their net saving, as the estimated coefficient of the interaction term with the education variable (-0.38) outweighs the estimated coefficient of the SSR_t (0.23). If household size is not taken into account (Models 2 and 3), the results remain largely the same. The regional control variable is not statistically significant anymore.

Table 5 in the appendix summarizes the estimation results for variations of the dummy variable for education. Model 4 uses the three-level variable underlying the bottom panels of Figure 2. Households are classified as non-academic when neither respondent nor spouse hold a

university degree. The second group consists of households where either respondent or spouse hold a university degree, but not both. And the third group consists of households where both hold a university degree. The interaction term of the SSR_t and education remains negative and statistically significant for households with one academic, but it no longer outweighs the coefficient of the SSR_t without interaction. The interaction term for households with two academics is not statistically significant. This model specification suggests that education helps to compensate the adverse effects of expansionary monetary policy on net household saving at least partly, but academic households do not on average benefit from monetary expansion.

Model 5 splits households with one academic further into two subgroups: households in which only the respondent, i.e. the woman, holds a university degree and those in which only the spouse holds a university degree. In this case only the interaction term of the SSR_t and the dummy variable for households in which only the respondent holds a degree is statistically significant and its effect size increases (from -0.02 in Model 4 to -0.03). This indicates that especially the education level of women is associated with compensating potentially adverse effects of monetary expansion on net household saving. The subgroup of households in which only the female respondent holds a university degree contains $n = 10,256$ observations. In 36.1% of the cases the respondent is married. In 13.8% of the cases the respondent is unmarried and lives in a one-person household. The unmarried respondents with university education living in single households have by far the highest monthly net saving as shown in Figure 9 in the appendix. There are, however, relatively few observations per year in these subgroups for reliable inference.

Table 6 in the appendix summarizes estimation results for the baseline model specification with variations of the monetary policy variable. Model 6 uses the natural logarithm of the monetary base M0 instead of the SSR_t. M0 is under direct control of the Bank of Japan and reflects in particular unconventional asset purchase programs. The sign of the interaction term

of the natural logarithm of M0 and the education variable is now positive and again statistically significant, which confirms the previous results: the more expansionary monetary policy, i.e. the bigger the growth rate of M0, the larger the average gap in net monthly saving between academic and non-academic households.

In Model 7 the shadow short rate is replaced by the natural logarithm of the size of the Bank of Japan's balance sheet. The estimation results are almost identical to those of Model 6. Both model specifications suggest that a 10% increase in the monetary base (or the BoJ's balance sheet), which corresponds to its average growth rate between 1993 and 2017, is associated with an increase of the ratio of average saving between academic and non-academic households of about 1.1%.

One could assume that distributional effects of monetary expansion materialize only with a certain time lag. However, adding the one-period lagged values of the monetary aggregates or of the SSR_t to any of the previously discussed model specifications does not lead to any statistically significant results.

4 Conclusion

The above analysis shows that inequality in terms of net saving per household as well as per household member has increased in Japan since 1993 according to several conventional measures of inequality. The empirical analysis shows that the increase is statistically associated with expansionary monetary policy measures as specified by the shadow short rate as well as the monetary base and the Bank of Japan's balance sheet. The increase in inequality materializes primarily through heterogeneous effects of monetary expansion on the saving behavior of households with different levels of education. The estimated baseline model suggests that a reduction of the shadow short rate by one percentage point leads to an average increase in the ratio of average saving between households with at least one academic and non-academic

households of about 3%.

The estimation results are robust to different types of variations in the model specification, including log-transformations of the explained variable, incorporating and ignoring household size, variations of the classification of households according to education, and variation of the policy variable. The empirical results suggest that the education level of the female respondents of the survey is especially important (more so than that of their male spouses) for compensating the potentially negative effects of expansionary monetary policy on household saving. Yet, a more extensive data set would be needed to draw more reliable statistical conclusions.

The analysis provides further evidence for the hypothesis that expansionary monetary policy as conducted in recent years has adverse effects on the distribution of income and wealth. Following the results of Saiki & Frost (2014) and Israel & Latsos (2020), who have found an adverse effect on income inequality, our paper suggests that it also translates into an adverse effect on wealth inequality through changes in households' saving and accordingly their ability to build up wealth.

References

Adam, K., & Tzamourani, P. (2016). Distributional consequences of asset price inflation in the Euro Area. *European Economic Review*, *89*, 172–192.

Auclert, A. (2019). Monetary policy and the redistribution channel. *American Economic Review*, *109*(6), 2333–2367.

Bordo, M. D., & Landon-Lane, J. (2013). Does Expansionary Monetary Policy Cause Asset Price Booms; Some Historical and Empirical Evidence. *Journal Economíca Chilena*, *16*(2), 4–52.

Coibion, O., Gorodnichenko, Y., Kueng, L., & Silvia, J. (2017). Innocent Bystanders? Monetary policy and inequality. *Journal of Monetary Economics*, *88*, 70–89.

Colciago, A., Samarina, A., & de Haan, J. (2019). Central bank policies and income and wealth inequality: A survey. *Journal of Economic Surveys,*, *33*(4), 1199–1231.

Dell'Ariccia, G., Rabanal, P., & Sandri, D. (2018). Unconventional Monetary Policies in the Euro Area, Japan, and the United Kingdom. *Journal of Economic Perspectives*, *32*(4), 147–172.

Domanski, D., Scatigna, M., & Zabai, A. (2016). Wealth Inequality and Monetary Policy. *BIS Quarterly Review*, (March), 45–64.

Duarte, P., & Schnabl, G. (2019). Monetary policy, inequality and political instability. *The World Economy*, *42*(2), 614–634.

Furceri, D., Loungani, P., & Zdzienicka, A. (2018). The effects of monetary policy shocks on inequality. *Journal of International Money and Finance*, *85*, 168–186.

Herradi, M. E., & Leroy, A. (2020). Monetary policy and the top one percent: Evidence from a century of modern economic history. *Document de travail - ffhalshs-03080162*.

Hülsmann, J. G. (2014). Fiat Money and the Distribution of Incomes and Wealth. In D. Howden, & J. T. Salerno (Eds.) *The Fed at One Hundred*, (pp. 127–138). Springer International Publishing Switzerland.

Inui, M., Sudo, N., & Yamada, T. (2017). Effects of Monetary Policy Shocks on Inequality in Japan. *Bank of Japan Working Paper Series 17-E-3*.

Israel, K.-F. (2017). In the long run we are all unemployed? *The Quarterly Review of Economics and Finance*, *64*, 67–81.

Israel, K.-F., & Latsos, S. (2020). The impact of (un)conventional expansionary monetary policy on income inequality - lessons from Japan. *Applied Economics*, *52*(40), 4403–4420.

Krippner, L. (2013). Measuring the stance of monetary policy in zero lower bound environments. *Economics Letters*, *118*(1), 135–138.

Krippner, L. (2020). A Note of Caution on Shadow Rate Estimates. *Journal of Money, Credit and Banking*, *52*(4), 951–962.

Kudo, H. (2018). Salaried Worker Pocket Money Survey. *Shinsei Bank Group*.
URL https://www.shinseibank.com/corporate/en/news/pdf/pdf2018/180628okozukai{_}e.pdf

Lise, J., Sudo, N., Suzuki, M., Yamada, K., & Yamada, T. (2014). Wage, income and consumption inequality in Japan , 1981-2008 : From boom to lost decades. *Review of Economic Dynamics*, *17*(4), 582–612.

Moriguchi, C., & Saez, E. (2008). The evolution of income concentration in Japan, 1886-2005: evidence from income tax statistics. *The Review of Economics and Statistics,*, *90*(4), 713–734.

Saiki, A., & Frost, J. (2014). Does unconventional monetary policy affect inequality? Evidence from Japan. *Applied Economics*, *46*(36), 4445–4454.

Taghizadeh-Hesary, F., Yoshino, N., & Shimizu, S. (2020). The impact of monetary and tax policy on income inequality in Japan. *The World Economy*, *43*(10), 2600–2621.

Taylor, L. (2020). *Macroeconomic Inequality from Reagan to Trump: Market Power, Wage Repression, Asset Price Inflation, and Industrial Decline*. Cambridge, MA: Cambridge University Press.

Ueda, K. (2012). The Effectiveness of Non-Traditional Monetary Policy Measures: The Case of the Bank of Japan. *The Japanese Economic Review,*, *63*, 1–22.

Appendix

Table 3: Summary statistics of net household saving per month

	per household				per person in household				
Year	Mean	Median	S.d. (σ)	Gini coef.	Mean	Median	S.d. (σ)	Gini coef.	n
1993	58.31	50.00	54.94	0.44	15.79	12.50	16.55	0.48	1380
1994	64.07	50.00	61.61	0.43	17.46	13.33	18.81	0.47	1340
1995	68.13	55.00	62.58	0.44	18.27	13.63	19.27	0.47	1276
1996	68.49	57.00	58.82	0.43	18.88	14.29	20.18	0.47	1227
1997	64.27	50.00	63.41	0.45	18.06	13.25	20.40	0.49	1653
1998	63.68	50.00	72.14	0.50	17.49	12.50	21.53	0.54	1600
1999	61.94	50.00	66.67	0.50	16.75	12.14	21.61	0.53	1515
2000	63.95	50.00	66.98	0.50	17.37	12.20	20.83	0.53	1460
2001	66.53	50.00	78.29	0.51	18.18	12.50	24.27	0.54	1377
2002	65.64	50.00	72.72	0.49	17.94	12.40	23.67	0.53	1333
2003	53.35	40.00	65.16	0.55	15.46	10.00	21.23	0.58	2065
2004	55.53	40.00	69.63	0.55	16.07	10.00	21.94	0.58	1932
2005	56.03	40.00	65.80	0.55	16.45	10.00	22.51	0.59	1812
2006	57.73	41.00	68.12	0.54	17.06	10.50	23.32	0.58	1714
2007	59.30	41.00	71.29	0.54	17.60	11.00	23.03	0.58	1652
2008	53.10	36.00	67.25	0.57	16.83	10.00	23.83	0.60	2179
2009	53.05	38.00	69.11	0.56	17.13	10.00	25.20	0.61	2092
2010	53.83	38.50	67.01	0.56	17.47	10.00	24.52	0.60	2024
2011	56.11	40.00	73.34	0.56	18.13	10.40	25.37	0.59	1959
2012	54.65	37.00	69.11	0.56	17.96	10.00	26.77	0.61	1901
2013	50.43	32.00	67.31	0.58	17.33	10.00	26.59	0.63	2435
2014	53.18	35.00	66.57	0.57	18.32	10.00	29.21	0.62	2268
2015	53.89	35.00	70.39	0.58	18.63	10.00	27.97	0.62	2191
2016	55.68	35.00	71.45	0.58	19.10	10.00	28.36	0.62	2079
2017	57.49	40.00	73.08	0.57	20.15	10.33	30.40	0.62	2029

Figure 7: Shares of total net saving per household of bottom 50% and top 10% of the saving distribution

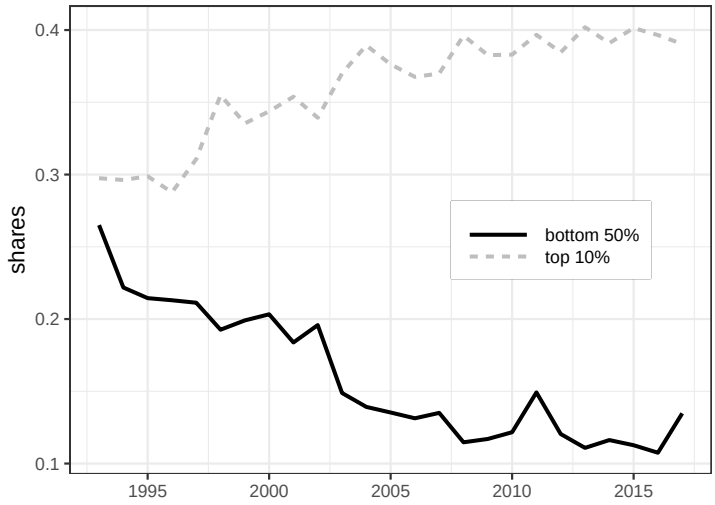


Figure 8: Growth of the Japanese money stock

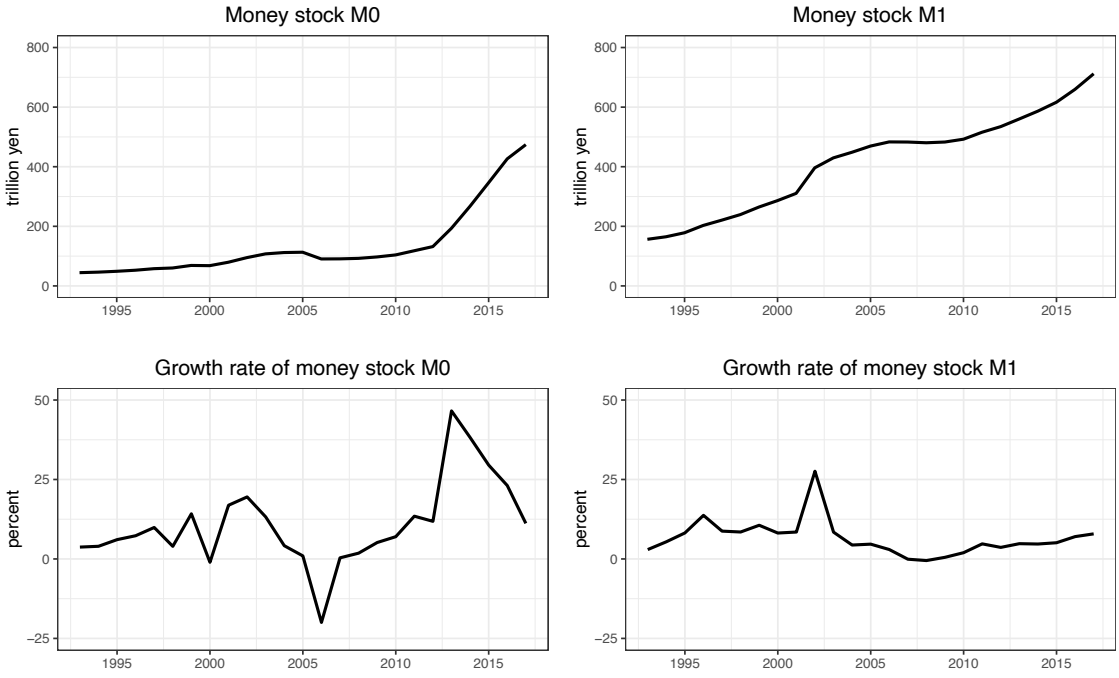


Table 4: Average net saving per month in different regions

	Kanto			Chubu			Kinki			Kyushu-Okinawa			Tohoku			Chugoku			Hokkaido			Shikoku		
Year	p. h.	p.p.	n	p. h.	p.p.	n	p. h.	p.p.	n	p. h.	p.p.	n	p. h.	p.p.	n	p. h.	p.p.	n	p. h.	p.p.	n	p. h.	p.p.	n
1993	57.32	17.31	472	66.16	15.86	255	60.62	16.24	220	47.96	13.75	139	63.33	15.00	99	61.01	16.31	79	36.00	10.08	69	63.00	13.34	47
1994	66.24	20.37	455	70.11	16.81	254	61.54	16.37	221	57.96	16.62	142	63.03	14.95	88	72.27	17.56	75	42.33	11.35	64	58.34	12.75	41
1995	67.37	19.83	425	74.71	18.96	245	70.32	18.58	205	57.36	16.02	140	77.40	17.84	85	74.96	18.39	74	41.66	11.67	62	71.15	14.79	40
1996	73.73	22.21	406	70.94	18.58	243	66.11	17.70	201	58.45	16.54	129	68.38	16.73	82	65.19	16.60	68	49.49	13.40	57	77.10	16.35	40
1997	67.21	20.53	558	67.00	17.71	327	62.18	17.96	265	55.84	16.01	167	69.15	16.34	116	66.61	17.35	85	40.84	11.31	80	75.02	16.17	53
1998	66.23	20.15	541	64.99	16.71	306	60.88	16.79	265	55.05	14.95	168	70.25	16.84	110	68.74	16.99	86	40.46	10.81	68	78.08	16.57	53
1999	65.87	19.58	499	66.39	16.85	291	58.01	15.72	254	49.42	13.76	163	66.27	14.57	103	71.62	18.27	84	42.53	10.88	64	59.06	12.33	52
2000	70.80	20.89	485	65.55	16.21	280	59.94	16.56	240	51.17	14.12	155	58.36	13.43	100	76.27	18.91	83	40.83	10.65	63	61.00	14.50	50
2001	69.50	20.75	447	67.64	17.02	267	68.19	19.23	237	51.65	14.11	147	70.85	16.35	93	87.26	22.44	72	37.29	10.31	62	70.48	15.57	48
2002	68.21	20.29	431	69.01	16.57	258	60.20	16.93	226	52.62	15.77	144	74.66	16.79	90	90.24	24.38	71	40.13	10.85	61	66.06	16.13	50
2003	54.34	17.14	712	62.56	16.74	384	51.64	14.88	343	38.28	11.88	223	56.03	12.98	128	60.24	16.42	112	39.41	12.64	90	52.30	12.55	71
2004	58.54	18.48	654	65.50	16.97	370	52.07	15.42	323	40.12	12.29	204	52.58	12.90	123	61.94	17.17	99	38.88	11.45	86	51.80	12.40	70
2005	60.39	19.30	593	61.75	16.77	355	50.70	14.68	314	43.92	12.78	186	53.95	13.47	113	64.89	18.70	97	40.33	12.16	81	59.95	16.32	66
2006	61.19	19.74	549	66.54	18.05	337	54.68	16.31	302	42.16	12.96	179	52.69	13.25	108	66.23	18.29	93	38.63	11.52	79	61.59	15.47	63
2007	60.21	19.61	523	71.34	19.26	328	55.51	16.51	304	47.54	14.89	173	52.77	12.98	100	68.60	19.79	89	36.67	11.80	76	62.85	15.22	53
2008	54.13	18.30	698	63.45	18.20	414	51.81	17.24	399	37.62	12.84	237	50.02	13.77	134	67.83	20.28	120	34.21	11.50	101	48.84	12.61	73
2009	54.92	18.88	673	59.90	17.39	396	54.19	18.14	380	40.49	13.48	222	47.73	13.42	131	58.60	17.94	119	35.06	14.05	98	57.03	14.63	69
2010	55.86	19.62	667	64.72	18.87	375	52.29	17.07	376	42.82	14.53	207	45.61	13.14	121	59.19	17.52	109	32.26	11.77	96	53.88	15.47	69
2011	57.87	20.27	636	65.33	19.08	368	52.51	17.03	366	44.99	15.43	204	56.53	14.58	112	67.22	19.98	109	39.23	14.93	94	48.27	14.46	66
2012	57.14	20.41	625	67.47	20.06	352	52.36	17.46	356	39.70	12.91	196	47.21	12.73	111	60.30	18.80	106	34.51	13.01	89	46.34	14.55	62
2013	53.47	19.91	808	58.83	18.10	438	50.86	17.22	444	35.50	12.60	262	43.05	12.50	148	51.49	16.78	142	39.66	15.40	111	47.46	15.36	78
2014	56.79	21.46	753	58.46	17.16	415	51.54	17.49	418	39.92	14.74	236	49.58	14.28	134	53.53	17.01	133	43.56	16.73	103	56.75	20.47	73
2015	56.58	21.13	727	60.58	19.19	403	54.05	18.32	405	41.44	15.01	231	46.28	13.10	128	56.63	17.37	127	42.03	17.26	101	54.36	17.80	66
2016	59.48	21.45	687	62.37	19.97	388	54.55	18.53	375	38.58	13.37	218	48.98	14.47	119	62.18	20.02	124	43.03	17.56	100	55.78	19.19	65
2017	62.23	23.45	672	62.08	19.68	370	55.66	19.29	368	43.27	15.51	214	56.84	17.90	119	56.74	17.50	121	47.62	18.00	100	58.44	21.63	63

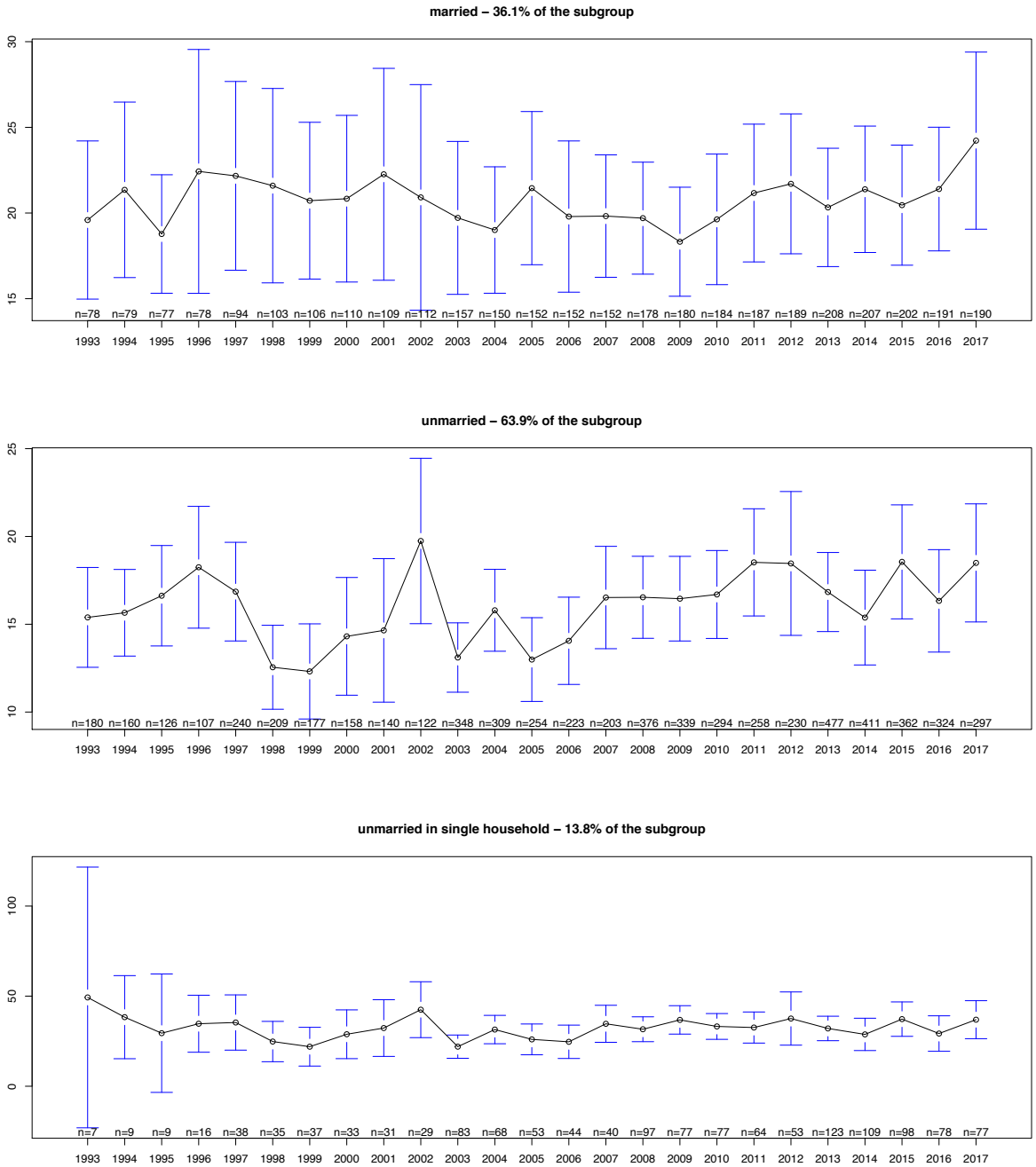
Notation: p. h. = per household; p.p. = per person in household; n = number of observations

Explained variable	Model 4 $\ln\left(\frac{y_{it}}{n_{it}}\right)$ ln of saving per household member	Model 5 $\ln\left(\frac{y_{it}}{n_{it}}\right)$ ln of saving per household member
ln(net income per household member)	0.32^{***}	0.32^{***}
	(0.01)	(0.01)
Education2 (1=both academics)	1.54^{***}	
	(0.12)	
Education1 (1=one academic)	0.87^{***}	
	(0.09)	
Region (1=not in Kanto)	-0.14^{*}	-0.14^{*}
	(0.06)	(0.06)
Shadow Short Rate	0.02^{**}	0.02^{**}
	(0.01)	(0.01)
Region*Shadow Short Rate	-0.00	-0.00
	(0.01)	(0.01)
Education2*Shadow Short Rate	-0.02	
	(0.01)	
Education1*Shadow Short Rate	-0.02^{*}	
	(0.01)	
Education2 (1=both academics)		0.24
		(0.68)
Education.M (1=male Academic)		0.91^{***}
		(0.09)
Education.F (1=female Academic)		-0.44
		(0.68)
Education2*Shadow Short Rate		-0.02
		(0.01)
Education.M*Shadow Short Rate		-0.01
		(0.01)
Education.F*Shadow Short Rate		-0.03^{**}
		(0.01)
R^2	0.11	0.11
Household fixed effects	Yes	Yes
Time fixed effects	Yes	Yes
Controls	Yes	Yes
Num. obs.	42202	42202

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$

Table 5: Variations of the education variable

Figure 9: Mean and confidence intervals of monthly net saving per household member for cases in which only the female respondent holds a university degree



Explained variable	Model 6 $\ln\left(\frac{y_{it}}{n_{it}}\right)$ ln of saving per household member	Model 7 $\ln\left(\frac{y_{it}}{n_{it}}\right)$ ln of saving per household member
ln(net income per household member)	0.34^{***}	0.34^{***}
	(0.01)	(0.01)
Education (1=at least one academic in HH)	0.62^{***}	0.59^{***}
	(0.11)	(0.11)
Region (1=not in Kanto)	-0.20^{*}	-0.20^{*}
	(0.09)	(0.10)
ln(M0)	-0.09^{**}	
	(0.03)	
Region*ln(M0)	0.02	
	(0.03)	
Education*ln(M0)	0.11^{***}	
	(0.03)	
ln(total assets of BoJ)		-0.09^{**}
		(0.03)
Region*ln(total assets of BoJ)		0.02
		(0.03)
Education*ln(total assets of BoJ)		0.11^{***}
		(0.03)
R^2	0.10	0.10
Household fixed effects	Yes	Yes
Time fixed effects	Yes	Yes
Controls	Yes	Yes
Num. obs.	42202	42202

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$

Table 6: Variations of the policy variable

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